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PALESTINE REFUGEE PROBLEM

The Present Position of Irrigation and Agricultural Development in Iraq

By
Sir Herbert Stewart, C.I.E.

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On my way back to Cairo from Bahrain I halted at Baghdad from 7th to 12th March, 1949, and renewed contacts with our own Embassy, the American Embassy, and various officials in the Irrigation and Agricultural Departments of the Iraq Government. The opportunity was taken to obtain up-to-date information on agricultural conditions and crop prospects, the progress of agricultural and irrigation development, and on matters affecting the terms and conditions of service of foreign technical officers employed in Iraq. Apart from meetings and talks with the staff of our own Embassy I called on and had discussions with Messrs. Crawford and Allen of the United States Embassy, H.E. Abdul Amir El Uzri, Director-General of Irrigation, Iraq Government, Messrs. Haigh and Hardy of the Irrigation Development Commission, Sayed Darwish al Haidari, Director-General of Agriculture, and Major J.A.M. Ferguson, till lately Director, Agricultural Machinery Department, Iraq. I visited the Abu Ghraib farm in the company of Sayed Darwish al Haidari and officers of his Department. The fullest facilities were afforded by the officers of the Iraq Government both to see recent developments and to obtain the latest information on agricultural and irrigation matters in which I was interested. I desire to express my appreciation of their cooperation and of the warmth of the reception which was given me everywhere.

I CROP PROSPECTS

2. The season has been favourable, though the weather has been abnormally cold and the cold weather prolonged. The cereal crops in the fields have not as a rule made great growth yet because of these conditions. Harvest prospects, however, are regarded as extremely good at present. The Director-General of Agriculture said that sowings of wheat and barley are much above normal - he placed the increase at 20%. All over the country, both in the rainfed area in the north and on the irrigated lands of the centre and south, he expects record yields, provided circumstances in three directions continue favourable. These are

1. No severe damage by locusts,

2. No serious attack of rust if the rains in the north should continue unduly late,

3. No serious floods to cause the rivers to overflow.

Given freedom from these calamities the Director-General considered that next year the exports of barley should be up to their normal level whilst wheat supplies should be more than self-sufficient. It is understood that of the wheat which was purchased for Syria after last harvest about 5,000 tons were used for seed purposes and the remainder is in store and may not be needed at present.

3. In some

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3. In some circles fears were expressed that if the rains should continue late and if there should be a rapid melting of the considerable quantities of snow which has fallen not only inside Iraq but in northern countries beyond it, river floods might be great this year. Officers of the Iraq Government, however, seem to find no cause for undue alarm in this connection at present.

II THE PROGRESS OF SOME SMALL DEVELOPMENT PROJECTS

4. Last year there seemed a possibility that cultivation might be extended in the current season to some extent in some areas. The present position is as follows :-

Dujailah This is a special project which is run by a separate Board. The Irrigation Department's share in it consists of canalisation and bringing to the spot the water for irrigation. The Irrigation Department has done its work and 80,000 mesharas (50,000 acres) of additional land were ready for cultivation and winter cropping in 1948-49. The land, however, has not been colonised so far. It is understood that cultivators have been selected by the Dujailah Board but that they await the final approval of the Council of Ministers. The present season has, therefore, been lost for cultivation.

Khorassan The Irrigation Department has not been able to make the necessary preparations and the scheme is delayed by a year, i.e. it will not be ready before the end of 1949.

Musayeb The object of this scheme is to improve the existing irrigation system of this canal. The Irrigation Department's work was not completed by the end of 1948 but has since been completed and the area was to be opened for cultivation on 11th March. The land should carry a crop in the coming summer.

Hawija This scheme deals with the completion of the existing irrigation system in the region. The Irrigation Department will have its share of the work completed by the end of 1949, as proposed. It will then be for the Ministries of Interior and Finance to provide the cultivators and to colonise the area.

Gharraf As for Hawija

Beled Ruz The scheme has been postponed for the present because of want of funds.

5. There will

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5. There will be no additional production this winter, from all these schemes, except a little at Dujailah and Musayeb through the increased water supply which will reach areas already under cultivation. No new areas will be irrigated.

III THE IRRIGATION DEVELOPMENT COMMISSION

6. The financial position of the Iraq Government has made it necessary to economise in expenditure. The closing down of the Irrigation Development Commission is one of the economies proposed. Already four of the senior engineers on the Commission have left the country whilst the remaining members of the staff are under orders of termination of services as from 30. 6. 1949. The date originally fixed was 31. 3. 1949, but a short extension was given in order that certain items of work might be completed. The Commission is now engaged on clearing up as much as can be done in the time still remaining. Mr. Haigh, the President, is writing up a report of the work done by the Commission since it came into existence.

7. Whether there is any chance of the Commission continuing beyond next June is uncertain but it is gathered that about a further year would be necessary for the Commission to complete the planning work on which it is engaged. Beyond that the justification for its further retention might not be great unless, as appears to have been contemplated originally, the Commission were to proceed from planning to execution. There seems to be a probability that if the life of the Commission should end in June Mr. F. S. Hardy, one of the senior engineers on its staff and an officer of long standing in the Iraq Irrigation Department, may continue in that Department on the planning side.

8. Officers whose contracts are terminated prematurely receive, in accordance with the terms of appointment, a sum equal to the amount of Provident Fund which the Iraq Government would have paid had the contracted period been completed. No other compensation is payable.

IV CONTROL OF THE WATERS OF THE RIVER TIGRIS

9. In July, 1948, the Iraq Government asked their Consulting Engineers, Messrs. Coode, Vaughan-Lee, Frank and Gwyther, for their opinion on the relative merits of certain alternative projects for the flood control of the River Tigris. After studying the plans, in conjunction with Sir William Halcrow and Partners (authorities on dam construction) the Consultants have submitted their report to the Iraq Government. The alternative proposals were :-

1. The Fatha

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1. The Fatha Dam project

2. The Bekhme Dam project

3. The Wadi Tharthat project.

10. Briefly stated the recommendations of the Consultants are :-

(a) Fatha Dam

This project had been rejected previously in 1940 by the Consulting Engineers. Since then the Irrigation Development Commission investigated the possibility of a long earth dam upstream of the Fatha gorge. The Consultants endorse the previous rejection of the project. This view supports that of the Commission.

(b) Bekhme Dam

This project had been recommended in 1940 by the Consulting Engineers. It gave a considerable measure of flood relief together with some storage of water for irrigation. Though the potential storage which the Bekhme Dam would provide would be far short of what the Commission now considers necessary for complete flood control of the Tigris, the Consultants consider that for storage of water for irrigation the project is sound. They adhere to the lower site, originally contemplated for the dam, as opposed to the site higher upstream which the Commission favoured, and overcome the objection to the fissured limestone substrata at the former by proposing to construct a watertight concrete cut-off wall on the upstream side of the dam. They recommend, therefore, that when irrigation development is such as to require water to be stored the Bekhme Dam should be constructed at the lower site. It would give a regulated supply at Samarra of some 400 cumecs minimum, except in occasional years of low discharge. The cost is estimated at I.D. 9 million approximately.

(c) Wadi Tharthar

The Consulting Engineers who had doubts about this scheme in 1940 have now re-examined it in the light of the detailed investigations which the Commission has

since made.

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since made. This project could give the full degree of Tigris flood control which the Commission now considers necessary, whereas the Bekhme scheme could not do so. The Consultants have considered the question whether the one scheme could be made to serve the dual purpose of flood relief and storage of water for irrigation. Their conclusion is that the Wadi Tharthar project is suitable for flood relief but that there are serious technical objections, difficulties and dangers which render it unsuitable for use as an irrigation scheme. Their recommendation, therefore, is that the Wadi Tharthar project should be designed in a simple form for flood relief only. All floods in excess of such limit as it is desired the Tigris should carry, could be passed into the Wadi Tharthar depression where they would evaporate. The cost of such a project is estimated at I.D. 6½ millions approximately. Thus the Consultants would completely separate flood control from irrigation operations.

11. The Consulting Engineers' recommendation that the Wadi Tharthar be used for Tigris flood relief endorses that of the Irrigation Development Commission and is equivalent to the Commission's proposed Stage I of flood control only, to be carried out in the next ten years. Their recommendation against its use for storage for irrigation, however, is contrary to that of the Commission.

12. <u>The Diala</u> As an alternative to the Consultants' recommended storage dam on the Bekhme, the Irrigation Development Commission has now submitted for the views of the Consultants the results of certain other investigations on storage which it has carried out elsewhere. These are concerned with the construction of a dam on the Gibraltar site on the River Diala and of another dam at Dokan on the Lower Zab river. The former reservoir would give a net storage capacity of 1.1 milliards of cumecs and is estimated to cost I.D. 2,580,000: the latter's net storage capacity would be 1.7 milliards cumecs and its cost probably less than I.D. 3,000,000. The combined storage of these two projects would thus be 2.8 milliards and the total cost I.D. 5½ millions, against 1.6 milliards net storage at a cost of I.D. 9 millions for the Bekhme Dam recommended by the Consultants. From the flood control aspect they would not be so valuable as the Bekhme since their relative effects on Tigris floods would be reductions of only 2,200 and 1,300 cumecs respectively against 4,500 cumecs for the Bekhme project.

13. The

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13. The supplementing of Diala supplies is a matter of urgency as irrigation development on this river has already proceeded in an area considerably in excess of that for which natural Diala supplies are adequate. If, therefore, the Consultants support these projects the Irrigation Development Commission will recommend to the Iraq Government the construction of the Gibraltar dam, and will propose that the Dokan dam be left over as a second stage project in their plan for further development.

14. The Commission estimates that if this Diala project is carried out it will not only remove the shortage already described but will provide water for the development of about 1,500,000 mesharas (almost a million acres) gross. In the Commission's view this development, together with that made possible by the Habbaniyah project on the Euphrates - 1,200,000 mesharas (three-quarters of a million acres) will provide for the needs of the country for the next ten or fifteen years.

15. After these areas have been developed fully, the construction of the Dokan dam on the Lesser Zab river would provide additional irrigation water for a further 2,000,000 mesharas (1½ million acres), and the second stage of the Habbaniyah project additional water for 500,000 mesharas (300,000 acres) - a total exceeding 1½ million acres. The Commission concludes that provision of further storage beyond these projects is not likely to be required for at least twenty years to come.

16. The Commission considers finally that for the full development of the country the maximum usage of Tigris water will be necessary and this can be effected only by storage in the Wadi Thar-Thar. The construction of the other schemes already discussed would, however, reduce the volume of storage which would be necessary in the Wadi Thar-Thar and would thus lessen the dangers which the Consultants see in the present storage project. It would appear, however, that, on the basis of the other possibilities described, this question may not arise for at least another two decades.

V SOIL RECLAMATION

17. No progress has been made of late in this connection. The Irrigation Development Commission drew up a project last year for the drainage and reclamation of an area of about 7,000 acres at an estimated cost of about I.D. 25,000 over a period of one year. This scheme was to serve two purposes: (a) it would enable the Commission to collect basic information, such as the required frequency of drains, necessary when undertaking large scale reclamation projects, (b) it

would serve

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would serve as a demonstration which would interest cultivators in reclamation measures. Lack of funds appears to have been largely responsible for the failure to undertake this scheme so far.

18. About 1945 another reclamation scheme, the Aqqar Quf project, appears to have been drafted. It provided for the drainage of some 150,000 mesharas (about 100,000 acres). The estimated cost is believed to have been of the order of I.D. 250,000 and the time required three years, provided the necessary excavation machinery should be available.

19. Possible Soil Reclamation Policy It is well known that the Iraqi cultivator is accustomed to use a much greater volume of irrigation water than is necessary for the production of ordinary crops on normal soils in other countries where irrigation farming is practised. The view has been advanced that he is forced to do so in self defence because of the alkaline soil. He finds that it is essential to irrigate his crops heavily in order to wash down as much of the alkaline salt as possible below the range of the plant roots, otherwise the salt accumulation in the upper layers will seriously reduce the yield of the crop. Thus his practice is a type of reclamation, but it can never be complete reclamation so long as drains to carry away the washed-out salts are absent. The salts are not actually washed out; they are merely driven down, only to rise again later. Complete reclamation of soils with salts of the type present consists primarily in leaching out the salts by heavy irrigation, amounting to flooding of the soil for a length of time, into a properly planned drainage system which disposes of them.

20. It is the view, therefore, of the Irrigation Development Commission that in undertaking large-scale soil reclamation measures the chief function of Government need only be to lay out and provide the necessary drainage system, leaving to the cultivator himself the actual leaching operations. It is further thought that little, if any, additional irrigation water need be made available to the cultivator for the purpose. The excessive volume of water which he applies under present conditions will automatically leach out the salts once the drains are provided. When that happy position is reached he will reduce the volume of water he uses for the production of his crops and will utilise the saving to reclaim and crop other areas which have gone out of cultivation. If this view should stand the test of experience it should speed up the rate of reclamation of the large area of land which either has gone out of cultivation altogether or which produces a yield which is a mere fraction of that given by normal soils.

21. So far

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21. So far as is known, the Iraq Government has not yet decided the policy to be adopted when it provides the means of reclamation on privately owned land. It seems imperative, if large scale reclamation is to be undertaken in the near future, that a decision be made as to the proportion of the cost of that provision which the land-owner should meet, in view not only of the greater yielding qualities of the soil in future but of the appreciation in land values which must result.

VI A SUGGESTED ORDER OF PRIORITY OF IRRIGATION AND SOIL RECLAMATION PROJECTS

22. For the execution of its development projects Iraq is likely to require outside financial aid. The following order of priority for the financing of irrigation and soil reclamation projects was suggested tentatively during a discussion with the Irrigation Development Commission

I On the basis of the available loan being relatively small

A. Assuming that the Iraq Government can finance the completion of the Habbaniyah work.

(i) The remodelling and development of the Hillah Canal area (Stage 1 only).
Estimated Cost I.D. 1,400,000.
The detailed plans are complete.
This project will utilise the water provided in the Habbaniyah scheme. Its result will be to permit additional annual cultivation of 325,000 mesharas in winter and 65,000 mesharas in summer-total 390,000 mesharas (250,000 acres) annually. Of this increase 135,000 mesharas winter and 27,000 mesharas summer - total 162,000 mesharas (100,000 acres) will be an extension of irrigation to new areas. The water remaining will provide an urgently needed improvement in water supplies in the already cultivated zone. The total cost of these two projects is estimated at I.D. 3,150,000, but it might exceed this sum.

(ii) Drainage

(a) The project already prepared but not executed for an

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for an area of about 7,000 acres, partly to obtain information basic to the conduct of large scale drainage operations and partly for demonstration to interest the public in land reclamation.
Cost I.D. 25,000: Time, one year.

(b) The Aqqar Quf project, drawn up in 1945. Cost I.D. 250,000: Time, 3 years if adequate excavation machinery is available. Provides for the drainage of 150,000 mesharas (100,000 acres approximately).

(iii) The Gharraf irrigation extension scheme. This project will increase the intensity of cultivation from about 35% as at present to about 50% over an area of 1½ million mesharas. The actual increase is taken at 13%, equivalent to an area of 200,000 mesharas (125,000 acres).

The detailed cost has not been worked out yet but may be of the order of I.D. 5 millions. One season would be required to prepare the complete project and about three years to carry out the work, if excavators are available.

B. Assuming that the Iraq Government is unable to finance the completion of the Habbaniyah work now in progress.

(i) The completion of the Habbaniyah work.
Estimated Cost I.D. 1,750,000, but may be more.
Time required for completion, probably four years.

(ii) The Hillah remodelling and development project (as in A above).
Cost I.D. 1,400,000

II. On the basis of a large loan

		I.D.
(a)	Completion of the Habbaniyah	1,750,000
(b)	Hillah development	1,400,000
(c)	Wadi Tharthar flood control	7,000,000
(d)	Gibraltar dam on the Diala	2,500,000
(e)	Drainage (lump sum)	1,000,000
(f)	Irrigation extension and development other than the Hillah (lump sum)	2,000,000
	I.D.	15,650,000

VII Recent

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VII RECENT DEVELOPMENTS WHICH AFFECT FOREIGN EMPLOYEES

(a) Income Tax

23. A new interpretation has been given to the existing income tax laws. By it the income tax payable by non-residents of Iraq has been increased. In Iraq income tax is paid on a slab basis. Income up to a certain limit is tax free. Beyond that a slab pays tax at one rate, the next higher slab pays at an higher rate, and so on. There also is a surtax on incomes exceeding I.D. 1,500 a year.

24. According to the new interpretation, which apparently is not an unfair one according to the wording of the Act, non-residents get no tax-free allowance. They must pay income tax on the full income. This means not only paying on what was hitherto free of tax but paying higher rates on the balance. If affects all foreigners, whether in Government service or in business.

25. The decision of the Iraq Government to apply the new interpretation and to collect arrears due, not only on the current financial year but for five years previous to it, caused great concern amongst those affected. Representations made to Government succeeded so far as to restrict its application to the current year and one year previous, i.e. from April 1947. First deductions of arrears were made from the last month's salaries of its foreign staff. Further representations have secured the consent of the Iraq Government not to make any further deductions until the whole issue has been re-examined. Meantime there will be no refund of deductions already made. If on re-examination it is decided finally to adopt the new interpretation, foreigners serving in Iraq on the basis of their present contracts will be less favourably placed financially than hitherto, unless the Iraq Government can be persuaded to legislate for the necessary abolition of the relevant section of the Act.

26. It is understood that so far no action has been taken to collect arrears of surtax. That aspect will hit highly-paid foreign officers heavily, if and when such action is taken, since the whole salary will become subject to surtax.

(b) Cost of living allowance

27. With effect from 1st April the Iraq Government is introducing reduced rates of high cost of living allowance. A schedule of new allowances covering basic salaries from I.D. 5 a month to those exceeding I.D. 75 a month has been published. The new rates, however, do not

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affect salaries exceeding I.D. 75 a month. On such salaries the present allowance of I.D. 24 a month will continue. Thus, most, if not all, of the foreign specialists required for agriculture and other spheres will not be affected.

VIII THE MECHANISATION OF AGRICULTURE

(a) Legislation

28. A Bill to regulate and control the import, sale and distribution of farm machinery of all kinds, so comprehensive as to range from a tractor to a dairy milk-can or a sheep-clipping machine, has been sent to Parliament. It is proposed to set up an Administrative Council of five people, who will include the Director-General of Agriculture and the Director of the Agricultural Machinery Department. This Council will import all such machinery, sell it and determine its distribution. No other authority will be able to do business in this line: private enterprise will be entirely excluded. The Bill has been considered by a Committee of Parliament and it is understood that changes and modifications have been made in various directions. The final form which the Bill will take is not yet known. The view was expressed in outside circles that in its original form the Bill would have been likely to meet with considerable opposition.

(b) Development

29. The Director-General of Agriculture has put forward a scheme for the mechanisation of 2 million donums (½ million acres) of land over a period of ten years by the introduction of 2,500 tractors and complementary machines. A sum of about I.D. 4 millions is involved and a loan for the purpose would be needed. Half the tractors and equipment would be sold to the public; the other half would be retained by Government and would be run as a hire-contract service. The Director-General has estimated that by utilising these machines on land at present cultivated on a peasant basis an annual additional yield of 100,000 tons of food grains would be obtained. To assure the success of such a scheme the provision of a sound and efficient repair and maintenance service and the appointment of foreign experts in agricultural machinery are vital preliminary requirements.

30. Service and repairs. The Iraq Government has just completed the erection at Baghdad of the first large workshop for servicing and repairing its agricultural mechanical equipment. The lathes and other machines and equipment have still to be installed. If funds are available the erection next year of similar workshops at Kirkuk and Diwaniyah is contemplated.

(c) Director

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(c) Director of Agricultural Machinery

31. The services of Major J.A.M. Ferguson, who has held this appointment since the war, have been terminated recently and the Director-General of Agriculture has assumed charge of this Department for the present.

32. In a talk Major Ferguson gave the following data and views :-

(i) Since 1944 there have been imported into Iraq
400 tractors and their ploughs
150 combine harvesters, tractor drawn
60 combine harvesters, self-propelled.

(ii) 150 self-propelled combine harvesters are on order.

(iii) The Iraq Government runs for hire-contract purposes
90 tractors (of which about 30 were believed to be out repair)
55 harvesters.
This service is very popular amongst cultivators.

(iv) In the absence of a properly equipped workshop, such repairs as can be done are carried out at Abu Gharaib where facilities are totally inadequate and no competent staff is employed.

(v) Beginning with 1947 the Department had a four years programme designed to increase the total number of tractors in the country to 2,000. The 1947 quota was obtained but further imports have been suspended for want of funds.

(vi) For wheat and barley cultivation in the north of the country, the Ferguson tractor is considered to be adequately powered and suitable. Its large scale introduction could best be worked on a co-operative basis by societies or villages. Government could make them available on a hire-purchase basis.

(vii) For irrigated land in the centre and south of the country a tractor of heavier type is needed. 30 - 40 H.P. is adequate power for all ordinary needs.

(viii) There

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(viii) There is a stock of binders and mowing machines with reaper attachment at Abu Gharaib. For binders suitable power take-off attachments for tractors are lacking. Cultivators in the north do not want ordinary mowing machines with reaper attachment: they prefer bullock-drawn self-delivery reapers of 4 - 4½ feet cut. None are available.

(ix) A very large tonnage of barley was combine-harvested last season for cultivators by 44 departmental machines in six weeks.

(x) No rice was combine-harvested last season although trials in the previous year had fully demonstrated its practicability.

(xi) The importance is stressed of thoroughly stripping all combines each year at the end of the harvest season, removing and storing the canvas until next season, emptying and dry-charging the batteries, removing and keeping chains in old sump oil, etc. It is only by so doing that these machines can be maintained in efficient working condition. Unfortunately this is not always done.

IX PROGRESS IN THE AGRICULTURAL DEPARTMENT

Finances

33. The Director-General of Agriculture said that because of the financial position of the Iraq Government his departmental budget this year had been reduced by about 40% on last year and 28% on the 1947 figure. He has had to effect an heavy reduction of expenditure in various directions. He has endeavoured to avoid curtailing or reducing technical staff and requirements and has concentrated on such items as postponing the purchase of machinery and equipment for two new farms and ceasing to purchase and distribute improved seed from private growers: his seed distribution this year is confined to departmentally produced seed.

Locusts

34. Hatching is likely to be late this year owing to the cold weather. During his visit to Persia recently the Director-General arranged for collaboration between the two countries in control measures. Similar collaboration with Syria worked very successfully last year.

35. Two

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35. Two helicopters have been purchased for locust control by spraying or dusting from the air. To operate them two mechanics and two pilots - all Americans - have been employed. The helicopters have been housed at Abu Gharaib since their arrival last summer. In the meantime they have been used for a survey of the forest areas of Northern Iraq.

Iraqi Staff

36. During the past year a few men have returned to Iraq after completing a degree course in agriculture in an Egyptian University. They have been departmentally employed. The general impression concerning them is that they know more about horticulture than agriculture.

37. 46 Iraqi students are undergoing a course of study in the U.S.A. in various branches of agricultural science. The first of them will return to Iraq in 1950 on completion of their studies. 22 of this number were sent last year. It is proposed to send 18 more this year if funds are available.

38. Lack of sufficient well-trained technical subordinate staff will prove an handicap to progress for the present in various scientific sections of the Department and many of the foreign specialists whose recruitment is visualised will have to work almost single-handed. Training is being given to those just returned from Egypt in lines in which their present knowledge is inadequate, to fit them to act as technical assistants in some of the research sections.

Foreign Staff

39. The number of foreign specialists in the Agricultural Department is small at present. The position regarding them is as follows :-

40. Dr. Hansford has recently obtained his Doctorate (Sc.D.) of Cambridge University on research which he did in the Colonies before he took up his present appointment. In the absence of facilities to carry on research on plant pathology until the new laboratories have been completed and equipped, Dr. Hansford has made himself useful as general "handy man" in the Agricultural Department. Fortunately his interests and his knowledge are diversified and though plant pathology is his specialised line, he can give a good account of himself in other directions. As a sample of his activities during the year or more he has been in Iraq.

(a) He gave

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(a) He gave that part of the course of statistics held in Baghdad by F.A.O. which relates to agricultural field experimentation. It is understood that Mr. Robinson, the F.A.O. officer who conducted the course, is more a census statistician than anything else, and it was arranged that Dr. Hansford, who is somewhat of a specialist in field experimentation, should deal with that side of the course.

(b) He is giving similar training at present to some Iraqis who have recently returned after taking a degree in an Egyptian University.

(c) He designed the new chemical and agronomical research block which is to be built next year at Abu Ghraib.

(d) He designed, according to correct modern technique, a series of agronomic experiments, mainly on the wheat crop, dealing with varieties and manurial requirements. These experiments are being carried out by the agronomy section under his guidance. When harvesting has been done he will train the staff in the interpretation of the results.

(e) He has spent much time on a committee appointed to prepare a scheme for building in Agricultural College.

(f) He has designed and is supervising the preparation and erection of the benches and other fittings in the new plant pathology laboratories which were built last year.

He has travelled very little in the country: he has been in the north only once, and two or three times in the south.

41. Dr. Hansford is popular with the Director-General and officers of the Agricultural Department and gets on well with them. He would not occupy an house of the type available for him at Abu Ghraib so he lives in an hotel in Baghdad, but he gets no rent allowance and he provides his own transport to and from Abu Ghraib. By the time the new plant pathology laboratories have been completed and are ready for occupation little of Dr. Hansford's present contracted period will remain and there seems little prospect of his being able even to begin serious plant disease research before he goes.

While he

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While he has been in Iraq he has devoted all his spare time to the writing of a book on the statistics of field experimentation. It should be ready for printing shortly and may be published by the Cambridge University Press. When published it will be a valuable aid to practical experimentalists.

42. Mr. Gillett will be leaving Iraq shortly to take up an appointment at Kew. He has been engaged on the preparation of a botanical flora of Iraq: about 50% of the work has been completed. It is understood that the Director-General was prepared to offer him improved terms in order to retain him but that Mr. Gillett was unwilling to continue.

43. Mr. Chapman's deputation from Cyprus will come to an end in a few months' time. The Director-General of Agriculture said he was willing to give him better terms in order to retain him, as he has done well, is active and generally knows his job but that it will be impossible to give the terms which Mr. Chapman has proposed.

44. Mr. Evans has just arrived in Iraq. He is a junior officer and has yet to show his qualities.

45. Thus, of the four specialist officers now remaining two will be leaving shortly. Dr. Hansford's contract has still 11 months to run (including the period of leave due to him). Whether he will continue on its expiration may depend on the terms offered.

46. The Director-General said that he still requires an agronomist, a cerealist, a soil technologist and a sheep-breeding specialist.

Abu Ghraib

47. During the past year progress at the Agricultural Station, Abu Ghraib, appears to have been mainly along the following lines :-

(a) Buildings

The erection of the plant pathology and entomology research block has been completed. Local carpenters are engaged in making and erecting the benches, cupboards and fittings in the laboratories of the former section. A considerable quantity of glassware and apparatus for the section has already arrived. Water and gas have still to be laid on. These laboratories

may be

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may be ready for occupation after three months at earliest. Until this section has been completed work on fitting up the entomology laboratories is not being begun.

Last year's expectation that residential accommodation of improved type would be erected for foreign specialist officers this year has not been realised.

(b) Agronomy

Due largely to Dr. Hansford's presence and pressure a beginning has been made in laying down field experiments according to modern statistical concepts. The large scale experiments deal mainly with wheat and barley, though there are smaller experiments with oats and linseed. The wheat experiments cover (1) varieties, (2) chemical fertilisers, where N.P.K. are being tested singly and in different combinations.

Apart from these experiments, over 900 varieties of American wheats are under observation in single rows of a few yards each.

Another set of plots deals with crop rotations. The series covers 2, 3 and 4 years' rotations. They are preliminary observations, however, rather than true experiments, for they are not replicated.

(c) Dairy herd

Abu Gharaib already had a small herd of a few Holstein cattle. To it has now been added a small herd of cattle of the Ayrshire breed, consisting of 2 bulls and 6 cows. (10 cows originally left Scotland but 4 died on the way). Two or three calves have been dropped already by the cows.

(d) Education

About 150 students are undergoing the three years' course at Abu Gharaib Agricultural School. It is understood that the syllabus of instruction was improved last year.

The Director-

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The Director-General of Agriculture hopes in due course to raise the status of this school to that of an Agricultural College: plans to that end have been drawn up. For an agricultural education of degree standard he considers it is cheaper and better to send scholars to foreign Universities than to attempt to provide such an education locally.

X TRUMAN'S TECHNICAL AID TO UNDERDEVELOPED COUNTRIES

48. An account of discussions with members of the U.S. Embassy staff on Truman's "fourth point" in its application to Iraq has been given in a separate memorandum.

H.R. STEWART

19th March 1949.

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